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ABSTRACT

This paper describes New York State Education Department policy initiatives in 1985-86 in planning for and implementing the acquisition of new learning technologies, including computers, telecommunications, and video technologies. Three issues that have been the focus of these initiatives are discussed: (1) the need to ensure equitable access to computer technologies for low-wealth and economically disadvantaged schools; (2) the need to systematically plan and implement "distance learning telecommunications networks" among small schools with declining enrollments for the provision of enhanced learning opportunities; and (3) the need to develop guidelines for the creation of public-private partnerships to achieve enhanced quality of instructional technology. In addition, future directions of policy initiatives in these three areas are briefly discussed. (Author/EW)

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Emergent Policy Issues Related to the Learning Technologies and Telecommunications

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Emergent Policy Issues Related to the Learning Technologies and Telecommunications

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There has been a rapid infusion of computers, telecommunications systems, and video technologies within New York State educational and cultural institutions during the previous half decade. The Center for Learning Technologies, created by the New York State Board of Regents in Fall 1982, was charged with the mission of developing a strategic plan for the effective use of these technologies and new policies to guide the implementation effort. Three issues related to the learning technologies have been the focus of significant State Education Department initiatives during 1985-86:

1) The need to assure equitable access to computer technologies for low-wealth and economically disadvantaged schools;

2) The need to systematically plan and implement "distance learning telecommunications networks" amongst small schools with declining enrollments for the provision of enhanced learning opportunities;

3) The need to develop guidelines for the creation of public-private partnerships to achieve enhanced quality in instructional technology;

A brief overview of the rapid acquisition of computer and other learning technologies by New York State schools will serve as a context for appreciating the complexities of each of the current policy issues.

The Infusion of Technology Within the Public and Nonpublic Schools

Annual survey data gathered by the Education Department's Information Center on Education provides dramatic evidence of the rapid acquisition of computer technologies by the total public/nonpublic schools of the State. For example, the public/nonpublic schools acquired 69,484 microcomputers during the 1984-85 school year; this number increased to 106,214 micros during the next 1985-86 school year, which represents a 52.9 percent increase.

Data on the acquisition of other learning technologies by New York State public/nonpublic schools underscores the emerging use of broadcast, video, and telecommunications technologies. In 1985-86, the public/nonpublic schools acquired 15,729 video cassette recorders, which was a 43 percent increase over the previous year. There was an installed base of 42,222 television monitors, and, for the first time, the schools had acquired nearly 100 satellite dishes for the reception of transmitted programming. Over 71,000 teachers were using television as a tool of instruction. More than 2,500 schools had installed cable networks and 4,323 of the total 6,287 public/nonpublic schools had receive capability of public broadcasting programming in support of

curriculum and programs. The data on computer acquisition is particularly important with respect to equity issues. The data on video and telecommunications technologies illustrates the emergent role of distance learning technology within the schools.

Equity

Equity is a Regents priority goal and the need to assure equitable access to technology resources for all populations has been actively pursued by the State Education Department with dramatic results. Data gathered in 1984-85 indicated that New York State schools having a major percent of their students on welfare (91-100%) had an average of 7 microcomputers per school as contrasted with schools having a small percent of students on welfare (1-10%), in which there were 16 micros per school.

Furthermore, schools with 91-100% of students on welfare had an average of 98 students per micro whereas schools with 1-10% of students on welfare had 38 students per micro.

The major policy concern related to this data was the need to increase the number of micros available to schools having a majority of students on welfare and to decrease the number of students per micro in these schools to provide enhanced access to the technologies. By the next school year, the data indicated that schools with 91-100% of students on welfare now had an average of 22 micros per school, which is a growth from the 7 micros per school of the proceeding year. Also, the schools with 91-100% of students on welfare had reduced the ratio of 98 students per micro to 33 students per micro.

Although there are many reasons which account for these positive trends, at least two State Education Department initiatives for closing the "gap" between the "have's" and "have nots" should be noted. First, State-aid provided to the schools for the acquisition of computer technologies was targeted upon those schools in need, thus providing enhanced fiscal resources to acquire computers. Second, negotiations were undertaken with the technology producers to reach agreement that corporations would, as a matter of corporate policy, provide "up front" price discounts on the cost of the technologies for New York State educational and cultural institutions. These agreements lowered the price of the technologies statewide and, thus, brought the cost of the technologies closer to the resources of many more school districts than ever before.

Distance Learning

There has been a phenomenal growth in the planning and implementation of Distance Learning networks throughout the Nation as schools, colleges, and cultural institutions struggle to provide higher quality education in an era of declining resources. The application of

telecommunications systems to allow for the remote delivery of learning to students represents an emerging technology trend that will probably supersede the impact of stand-alone computers upon learning and educational systems. A distance learning network consists of a master teacher and a class of few students (5-6) in one school linked interactively to other students in classes in other remote schools. The teacher and students converse and learn over distances through a telecommunications medium, such as cable, telephone-based systems (computers and modems), or microwave. The networks allow for the transmission of both visual and audio signals and, therefore, both the teacher and students are able to converse with and see each other, despite the fact that they may be separated by miles.

During the 1985-86, the Center for Learning Technologies gathered descriptive information on 26 newly formed Distance Learning projects, which involved the coordinated planning efforts of both the schools and the postsecondary institutions. Nine of the currently operating projects have offered advanced placement courses in calculus, geometry, second languages and economics. The remaining 17 projects are engaged in planning and are exploring a wide variety of satellite-based telecommunications applications for implementing their distance learning networks. Most significantly, the 26 projects, all of which emerged during a single year, involve nearly one-half of the 731 public school districts and one-half of the 43 Boards of Cooperative Educational Services (BOCES).

Most of the distance learning projects have been undertaken by small schools with limited or declining enrollments because telecommunications technologies represent an efficient application that allows a small school to offer enhanced teaching opportunities or access to courses that would not otherwise be undertaken because of limited fiscal resources.

The New York State Center for Learning Technologies has begun several initiatives to address many of the issues and concerns related to this rapidly emerging technology. First, there is an immediate and vital need to provide information, planning models, and appropriate staff development assistance to schools who wish to explore distance learning technologies. Responding to the challenge, the Center has initiated the following:

- Developed descriptive profiles on each of the projects which contain information on the nature of the telecommunications technology employed, the curriculum taught, the grade levels addressed, sources of funding, evaluation data, and primary program and technical assistance contacts.

- In February 1986, the State Education Department worked with other statewide organizations on developing numerous workshops in distance learning for a statewide Learning Technologies Fair, which is typically attended by approximately 1,500 educators from all sectors of the state.

- The Center also produced in February, 1986, a teleconference on distance learning, which was broadcast live over the entire PBS network throughout the State to millions of citizens, to enhance understanding of the technology, profile the projects, review the issues, and answer direct inquiries from the field.

- Since many of the projects incorporate video production techniques and over 71,000 teachers are using video in their classrooms, a statewide Video Production Workshop is being planned for July 1986 which will follow a train the trainers model to insure that a cadre of professionals are trained on the use of video production techniques across the state. The program will be replicated and installed in key staff development sites.

- Finally, a major publication has been planned which will focus on video programming as a "stand-alone" resource, video production as a tool of instruction, and examples of distance learning networks.

There are several major policy concerns and issues related to the distance learning networks which the Department has begun to explore:

- There is a need to provide effective statewide fiscal resources to schools to underwrite the cost of planning, provide technical assistance, implementation and operations of distance learning.

- There is a need to provide effective statewide management of the current and future distance learning networks to assure that appropriate planning has occurred, that the implementation of the networks is based upon an adequate base of research and needs assessment data and that planning is a multiple-agency effort that takes into account existing telecommunications capacities that could be utilized at greatly reduced costs as opposed to installing redundant or duplicative systems.

- There is a need to gather evaluative data. What curriculum is most appropriate for teaching in a distance learning network? What are the effective network models to guide planning? What is the impact of teaching via a network vs. a traditional class mode upon student learning? What supporting resource materials need to be developed for distance learning? What are the comparative costs of different telecommunications technologies?

- There is a need to address other issues. If a master teacher, who is accredited in one state, is linked electronically to students in another state, in which the teacher does not hold accreditation, what is the policy for handling this accreditation issue? If a master teacher in one school is teaching students remotely in several other different school systems, then by whom or what school district is the teacher employed? If a school district teachers contract specifies a specific maximum number of students per class, how is this to be resolved in light of the fact that many electronically enrolled classes may exceed the

class size limit? Is there a special certification program that needs to be designed for the preservice teacher education programs for distance learning teaching?

The Regents Advisory Council on Learning Technologies, an advisory group comprised of field-based representatives, has recommended the development of a major legislative proposal for submission in the 1987 package to provide funding for effective planning and research, the provision of technical assistance, implementation and operation of distance learning networks. Recently, a bill was introduced by the Chair of the New York State Commission on Rural Resources to provide funding to the Department to manage the distance learning projects and to develop models of effective curriculum for distance learning networks.

Public-Private Partnerships

The New York State Education Department has taken a national leadership role in forging effective alliances between producers and educators to address the need for enhanced qualities and standards within the technologies. The Department has initiated numerous "partnerships" with specific producers of both computer hardware and software products aimed at the following objectives:

- o To insure a close match between the goals and the objectives of computer software, as well as the pedagogical theories that underlie the product, with the theories and curriculum objectives of the school. This has been accomplished by bringing together commercial designers of products with educators in "publishers forums" to discuss the need for enhanced qualities in computer software and to negotiate a corporate commitment to target future product development activities in those content areas designated as priority by the Department. The July 1983 Software Colloquium, reported in Electronic Learning, is an example of a Department forum. Other techniques have involved the development of guides which provide a correlation between the objectives of the products and the curriculum. The State Education Department is producing a guide for the Voyage of the Mimi program.

- o To provide donations of new technology products at the State Education Department's computer training facility and at focused sites across the state where the products can be evaluated and tested. Donation programs were negotiated with IBM, Honeywell, Prime, Victor Technology, Commodore, Apple, JAM, Video Vision, AT&T, Mindset, and Data General. Through this effort, the Center has achieved nearly $5 million in consigned hardware in a two-year period. Also, the Center has worked with corporations, such as Corvus Computer, Inc., to establish a national foundation program to place technology within the schools under grant awards.

- To provide "model" statewide price discounts on products available to all educational and cultural institutions as a matter of corporate policy that do not involve prior agreements to purchase or statewide contracts. The discounts have ranged from 15 percent to as high as 46 percent. Companies which have recently participated in this program include JAM, Inc., a videodisc company, and Holt, Rinehart and Winston.

- To make a specific commitment to support effective staff development programs on the new products by hosting statewide and regional training sessions. Recently, Apple Computer offered several regional conferences, or Publisher's Forums, across New York State to stimulate a dialogue between publishers and educators regarding the impact of the new K-12 curriculum and testing mandates of the Department upon future software development. Thousands of teachers have attended these conferences.

Despite the obvious effectiveness of these partnerships, there is a need to assure that Department interaction with producers is not construed as "endorsing" a particular company. Thus, the Regents Advisory Council on Learning Technologies recommended to the Board of Regents the development of a policy to govern these relationships and urged that the policy address the following.

- The policy should not restrict competition but rather encourage it.

- The Department should not be placed in the position of endorsing a commercially developed product.

- Members of the Department should not profit from such partnership programs.

- The elements of a partnership program should include one or more of the following: a statewide cost reduction program; provision by the vendor of appropriate staff development; and, openness to teacher involvement in the development of products.

- The policy should address copyright provisions, equity concerns, and state licensing agreements in order to provide the widest access to resultant products.

- The policy should incorporate some form of "sunshine provision" by publicly stating (1) what the elements of the agreements reached or negotiated are and (2) the timeline for the partnership effort.

- A provision that the Commissioner has the right to terminate a relationship if it is determined to be in the best interests of the State and the integrity of the Department.

Future Directions

The New York State Education Department is currently pursuing several legislative initiatives and activities to address each of the policies.

Equity

New state aid provisions and specific programs have been funded by the Legislature for 1986-87 to continue equitable access to the technologies and insure that appropriate staff development activities related to equity issues occur.

o Special Services Aid. The Legislature approved an increase of $7.5 million in special services aid to provide for computer acquisition and related services to the Big Five city school districts in which there are concentrations of minority and economically-disadvantaged students.

o Science and Technology Entry Programs (STEP). The Legislature provided a $1.1 million increase, reflecting a 230 percent increase of the STEP program's current funding of $500,000. The STEP program is designed to assist minority and economically disadvantaged secondary students in acquiring the skills necessary to pursue pre-professional or professional education programs of student in technical fields as well as in the sciences and health-related disciplines.

o Computer Equity Staff Training. This pilot training program, funded by a Title IV - Civil Rights Act sex desegregation grant, is scheduled for the Spring and Fall of 1986. It is designed to acquaint occupational education teachers with practical information about the inequities that exist in computer access and learning and to provide strategies for promoting gender, race and ethnic equity in the use of computers and other technology for instructional purposes. Major concern will be given to overcoming policies and procedures that unintentionally causes inequities in computer learning. This training will include strategies for infusing the ongoing component of computer instruction into the regular curriculum and criteria for the selection and evaluation of courseware.

Distance Learning and Telecommunications

The State Education Department's Center for Learning Technologies has initiated several activities designed to provide a broad-based source of funding for distance learning and to begin the process of statewide multiple-state agency planning of an integrated telecommunications system.

o Efficiency Study Grant Program. The Efficiency Study Grant program for 1985-86 school year funded twelve projects to study the implications of distance learning networks. $140,000.00 was allocated

for these twelve projects, which included the participation of 57 school districts and several BOCES. This program will continue to fund the studies of telecommunications and distance learning networks undertaken by school districts in the 1986-87 school year.

o Technology Network Ties (TNT). The Technology Network Ties (TNT) is a pilot telecommunications network which would link the State Education Department, regional BOCES and local school districts for administrative and instructional purposes. Legislation enacted during the 1986 legislative session expanded funding for a statewide computer-based support system for the management of schools as well as for improved information storage and transfer. This provision, which developed out of the TNT program for 1985-86 funded for $1.1 million, provides $3.5 million in 1986.

o Statewide Coordination of Telecommunications. Legislation has been introduced which would create an Office of State Communications Management for the purpose of developing and managing a coordinated communications system for use by State agencies and local governments. This proposed legislation would provide a centralized approach to the acquisition and leasing of additional communications equipment at a greatly reduced cost.

o Inter-Agency Planning. The Center for Learning Technologies managerial staff is involved with the telecommunications planning efforts of the Office of the Lieutenant Governor, which focused on the State's telecommunications infrastructure; the Office of General Services Telecommunications Task Force, which is exploring the possibility of establishing a state agency-wide telecommunications network and the NYSERNet Policy Committee, which is designing a supercomputer research network. In addition, the Center has provided research and background information on telecommunications capacities to the Legislative Commission on Expenditure Review, which is currently involved in the exploration of the telecommunications capacities intended for and managed by State agencies. The Center has also provided technical assistance to the New York State Department of Tax and Finance for a complex computer-driven telephone communications system.

Public-Private Partnerships

The Legislature has funded a New York State Teacher Summer Business Training and Employment Program directed at encouraging educator-producer collaboration in developmental projects for the sciences and technologies. Specifically, the Legislature provided an increase of $2 million for summer business training of teachers as well as employer specific training programs for youth, thus bringing the total funded to $6.4 million. The funding provides reimbursement to companies to hire teachers for an approximate two-week duration during the summer to work on special projects in the fields of science, mathematics, computer science, and occupational education. Teachers

may seek employment with computer hardware/software companies on a variety of projects that enhance curriculum areas under this program.

Conclusion

The preceding review of these important technology planning issues - equity, distance learning, and partnerships - illustrates not only the leadership role that state government must exercise to ensure effective implementation and legislative enactment in support of the technologies, but also the complex issues that must be addressed because of the rapid impact of the technologies upon current educational systems.